

REMARKS

Claims 1- 25 are and under consideration pending in the above-identified application.

In the Office Action, Claims 1- 25 were rejected, and Claims 5 - 7 and 17 - 19 were objected to as being dependent upon rejected base claims.

In this Amendment, Claims 1, 5, 10, 12 and 24 - 25 have been amended, Claims 7, 9, 11, 13 - 19 and 22- 23 have been cancelled, and Claim 26 has been added. No new matter has been introduced as a result of this Amendment.

Accordingly, Claims 1 - 6, 8, 10, 12, 20 - 21, 24 - 26 are at issue.

I. In the Specification

As required by the Examiner, the Title has been amended to recite “Vibratory Gyrosensor Having A Vibration Element With Terminals.”

Accordingly, Applicants respectfully request that the specification rejection be withdrawn.

II. 35 U.S.C. § 112 indefiniteness Rejection of Claims

Claims 4, 6, 8, 10 -11, and 15 are rejected under 35 U.S.C §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

In view of the amendment to Claim 1, the rejections of Claims 4, 6 and 8 are now moot.

Claim 10 has been amended to replace the phrasing “a plurality of the vibration elements” with the phrasing “a plurality of [[the]] vibration elements” to remove the issue of antecedent basis.

The rejections of Claims 11 and 15 are now moot in view of their cancellation.

Accordingly, Applicants respectfully request that the claim rejection be withdrawn.

III. Double Patenting Rejection

Claims 1, 2, 10 - 12, 20 and 24 - 25 were rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 1, 6, 8 and 15 - 17 of U.S. Patent No.: 7,400,078.

In response to this rejection, Applicant is submitting a “Terminal Disclaimer.”

Accordingly, Applicants respectfully submit that the Double Patenting rejection has been overcome.

IV. 35 U.S.C. § 102 Rejection of Claims

Claims 1, 2, 12, 20, and 24 - 25 were rejected under 35 U.S.C. 103(a) as being anticipated by JP 11-266135 to Haruta et al. ("Haruta").

Independent Claims 1 and 12 have been amended to clarify the invention and remove any ambiguities that may have been at the basis of this claim rejection.

Claim 1 is directed to a vibratory gyrosensor.

In relevant part, Claim 1 recites that:

“... a supporting substrate, which has a wiring pattern having a plurality of lands disposed thereon; and

a vibration element mounted on a surface of the supporting substrate, the vibration element having a base portion having a mounting surface that faces the supporting substrate and provided with a plurality of terminals that are connected to the lands and a vibrator portion extending integrally from a side of the base portion in a cantilever manner and having a substrate-facing surface, the substrate-facing surface being provided with a first electrode, a piezoelectric layer stacked on the first electrode, and a second electrode stacked on the piezoelectric layer,

wherein,
at least one of the first electrode layer and second electrode layer having a plurality of electrodes,
the vibration element is mounted on the supporting substrate by joining the terminals to the lands with metallic projections disposed therebetween.”

That is, as illustrated in at least FIGs. 2 and 4, a vibration element mounted on a surface of the supporting substrate 2, the vibration element having a base portion 22 having a mounting surface that faces the supporting substrate 2 and provided with a plurality of terminals that are connected to the lands and a vibrator portion 23 extending integrally from a side of the base portion 22 in a cantilever manner and having a substrate-facing surface 23-2, the substrate-facing surface 23-2 being provided with a first electrode 27, a piezoelectric layer 28 stacked on the first electrode 27, and a second electrode 29 stacked on the piezoelectric layer 27. At least one of the first electrode layer 27 and second electrode layer having a plurality of electrodes.

Thus, the mounting surface of the vibration element and the substrate-facing surface are on the same side of the vibration element. Moreover, the plurality of terminals of the base portion and the first and second electrode layers and the piezoelectric layer are also located on the same side/surface of the vibration element. This structure of the claimed vibratory gyrosensor enables a detection of a Coriolis force.

This is clearly unlike Haruta.

As illustrated in at least FIG. 1 and disclosed in at least paragraph [0019], Haruta teaches that electrodes 21 and 22 are positioned on opposite sides of the piezoelectric oscillator, rather than being positioned on the same surface facing the substrate, as required by Claim 1. See paragraph [0019] appended below with emphasis added:

[0019] The excitation electrodes 21 and 22 are formed in the table rear faces of each so that the Xtal diaphragm 2 may consist of a rectangle AT cut quartz plate, for example, a thickness skid oscillation may be excited, and the drawer electrodes 21a and 22a are drawn from each excitation electrodes 21 and 22 by the longitudinal direction of the Xtal diaphragm. *Moreover, drawer electrode 21b is formed in a part of rear face corresponding to drawer electrode 21a, and drawer electrode 22b is formed in a part of front face corresponding to drawer electrode 22a.* In addition, the dimension of the Xtal diaphragm is constituted from die length of 4 mm, and width of face of 1.6 mm by the thickness which obtains the frequency of 32 MHz, and a lower layer consists of chromium and, as for each excitation electrode and a drawer electrode, the upper layer is constituted from this example by gold.

As such, Haruta fails to teach or suggest all of the limitations of Claim 1.

Therefore, Claim 1 is allowable over Haruta, as are dependent Claims 2, 5, 6 and 24, for at least the same reasons. Newly added Claim 26 is also allowable because of its dependence on Claim 1.

Independent Claim 12, which recites the same distinguishable limitation as that of Claim 1, is also allowable over Haruta, as are dependent Claims 20 and 25, for at least the same reasons.

Accordingly, Applicants respectfully request that these claim rejections be withdrawn.

V. 35 U.S.C. § 103 Rejection of Claims

Claim 3 was rejected under 35 U.S.C. 103(a) as being unpatentable over Haruta et al. in view of JP 8-264540 to Tago.

Claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over Haruta et al. in view of U.S. Publication 2001/0051396 to Iwahashi et al.

Claims 8 and 9 were rejected under 35 U.S.C. 103(a) as being unpatentable over Haruta et al. in view of U.S. Patent 6,631,642 to Oguchi et al.

Claims 10 - 11 were rejected under 35 U.S.C. 103(a) as being unpatentable over Haruta et al. in view of WO 98/41818 to Akashi et al.

Claims 13 -16 were rejected under 35 U.S.C. 103(a) as being unpatentable over Haruta et al. in view of JP 2005-39435 to Isohata.

Claim 21 was rejected under 35 U.S.C. 103(a) as being unpatentable over Haruta et al. in view of JP 10-051263 to Wakao et al.

Claim 22 was rejected under 35 U.S.C. 103(a) as being unpatentable over Haruta et al. as applied to Claim 21 above, and further in view of JP 8-078954 to Ise.

Claim 23 was rejected under 35 U.S.C. 103(a) as being unpatentable over Haruta et al. as applied to Claim 21 above, and further in view of JP 7- 201650 to Minami.

Claims 5 - 7 were objected to as being dependent upon rejected base Claim 1, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The rejection and objection to Claims 7, 9, 11, 13 - 19 and 22 - 23 are now moot in view of their cancellation.

In regard to Claims 3, 4, 8, 9, 10, and 21, none of the cited references relied upon for these obviousness rejections recite the distinguishable limitation of Claims 1 and 12. As such, these claims are allowable over any reference combination.

Accordingly, Applicants respectfully request that these claim rejections be withdrawn.

VI. Conclusion

In view of the above amendments and remarks, Applicant submits that Claims 1 - 6, 8, 10, 12, 20 - 21, 24 - 26 are clearly allowable over the cited prior art, and respectfully requests early and favorable notification to that effect.

If the claims are not found to be in condition for allowance, the Examiner is requested to contact the undersigned to schedule an interview before the mailing of the Office Action. Any communication initiated by this paragraph should be deemed an Applicant initiated interview.

Respectfully submitted,

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